WHAT IS CLAIMED IS:

1. A pressure control valve, driven by an actuator, for controlling pressure in a control chamber, the pressure control valve comprising:

a housing having a cylinder bore and a valve chamber that includes a high pressure port having a high pressure seat and a drain port having a drain seat; and

a valve needle having a valve body disposed in the valve chamber and a piston portion connected to the valve body and slidably disposed in the cylinder bore, the valve body having a first surface adapted to contact the drain seat and a second surface adapted to contact the high pressure seat, wherein:

the pressure in the control chamber is controlled by selectively closing the high pressure port or the drain port, the high pressure port being closed by sitting the second surface of the valve body on the high pressure seat, the drain port being closed by sitting the first surface of the valve body on the drain seat; and

the pressure control valve is structured to satisfy the following formula: $D1 \geq D2 \geq D3$, where D1 is a diameter of the drain seat, D2 is a diameter of the high pressure seat and D3 is a diameter of the piston portion.

2. The pressure control valve as in claim 1, wherein:

the diameter of the high pressure seat is a little larger than the diameter of the piston portion, and the diameter of the drain seat is a little larger than the diameter of the high pressure seat.

3. The pressure control valve as in claim 1, wherein:

the actuator for driving the pressure control valve is composed of a stack of piezoelectric elements.

4. The pressure control valve as in claim 1, wherein:

the drain seat is a flat surface perpendicular to an axial direction of the pressure control valve; and

the first surface of the valve body is a surface slanted relative to the drain seat, ascending from its inner fringe toward its outer fringe, the first surface contacting the drain seat at the outer fringe thereof when the valve body closes the drain port.

5. The pressure control valve as in claim 1, wherein:

the drain seat is a flat surface perpendicular to an axial direction of the pressure control valve;

the first surface of the valve body is composed of a surface slanted relative to the drain seat, ascending from its inner fringe toward a seat position, and an

additional surface slanted relative to the drain seat, descending from the seat position toward an outer fringe of the first surface; and

the first surface contacts the drain seat at the seat position when the valve body closes the drain port.

6. The pressure control valve as in claim 5, wherein:

an angle made between the drain seat and the additional slanted surface is such a size that is able to catch foreign particles contained in liquid flowing into the valve chamber.

7. The pressure control valve as in claim 5, wherein:

an angle made between the drain seat and the additional slanted surface is in a range from 0.5° to 10°.

8. The pressure control valve as in claim 5, wherein:

an angle made between the slanted surface and the additional slanted surface is an obtuse angle.

9. The pressure control valve as in claim 1, wherein:

the first surface of the valve body is a flat surface perpendicular to an axial direction of the pressure control valve; and

the second surface of the valve body is a surface slanted relative to a plane perpendicular to the axial direction of the pressure control valve, ascending from its inner fringe toward its outer fringe, the high pressure seat contacting the second surface at a position between the inner fringe and the outer fringe of the second surface when the valve body closes the high pressure port.

10. The pressure control valve as in claim 1, wherein:

the first surface of the valve body is a flat surface perpendicular to an axial direction of the pressure control valve;

the second surface of the valve body is a surface slanted relative to a plane perpendicular to the axial direction of the pressure control valve, ascending from its inner fringe toward its outer fringe; and

the high pressure seat is a surface further slanted relative to the slanted second surface of the valve body, the second surface contacting the high pressure seat at the outer fringe of the second surface when the valve body closes the high pressure port.

11. The pressure control valve as in claim 10, wherein:

the slanted second surface of the valve body and the slanted surface of the high pressure seat overlaps with each other in a radial direction perpendicular to the axial direction of the pressure control valve, the overlapped length being set to 0.1 mm or less.

12. A fuel injector having a control chamber for controlling operation of a nozzle needle, a pressure of the control chamber being controlled by the pressure control valve defined in claim 1.